

CATALOG DOCUMENTATION
REGIONAL ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM - REGION 1
1993-1994 FISH TISSUE CONTAMINATION IN MAINE LAKES
LAKE WATER QUALITY PROFILE DATA

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1. DATA SET IDENTIFICATION

1.1 Title of Catalog document

Regional Environmental Monitoring and Assessment Program - Region 1
1993-94 Fish Tissue Contamination in Maine Lakes
Lake Water Quality Profile Data

1.2 Author of the Catalog entry

Melissa Hughes, OAO Corporation

1.3 Catalog revision date

10 March 1998

1.4 Data set name

REPROFIL

1.5 Task Group

Region 1

1.6 Data set identification code

00005

1.7 Version

001

1.8 Requested Acknowledgment

If you plan to publish these data in any way, EPA requires a standard statement for work it has supported:

"Although the data described in this article have been funded wholly or in part by the U. S. Environmental Protection Agency through its Regional EMAP program, it has not been subjected to Agency review, and therefore does not necessarily reflect the views of the Agency and no official endorsement should be inferred."

2. INVESTIGATOR INFORMATION

2.1 Principal Investigators

Barry Mower
Jeanne DiFranco
Linda Bacon
David Courtemanch
State of Maine Department of Environmental Protection

2.2 Investigation Participant-Sample Collection

Not applicable

3. DATA SET ABSTRACT

3.1 Abstract of the Data Set

The R-EMAP Region 1 Lake Water Quality Profile data set contains dissolved oxygen, temperature, pH and specific conductance data generated from a sonde deployed in the water column.

3.2 Keywords for the Data Set

Lake, Maine, water column, dissolved oxygen, temperature, pH, specific conductance

4. OBJECTIVES AND INTRODUCTION

4.1 Program and Project Objectives

4.1.1 Program Objective

Regional Environmental Assessment and Monitoring Program (R-EMAP) was initiated to test the applicability of the EMAP approach to answer questions about ecological conditions at regional and local scales. Using EMAP's statistical design and indicator concepts, R-EMAP conducts projects at smaller geographic scales and in shorter time frames.

4.1.2 Project Objective

The primary goal of this study was to estimate the levels of contamination in fish populations, and the risk these levels pose to human and wildlife consumers. The primary objective was to determine concentrations of cadmium, lead, mercury, PCBs and selected pesticides in fish collected from Maine lakes.

4.2 Data Set Objective

Water quality conditions in a lake were characterized from a profile recorded at the deepest depth.

4.3 Data Set Background Discussion

From a population of 1800 Maine lakes that have been surveyed by the Maine DIFW and have principal fisheries, one hundred and fifty lakes were selected using the EMAP sampling design and 125 were sampled. Correlations with factors that may affect a fish's or lake's sensitivity to contamination will be examined secondarily. These factors include species, size, age, geography, geology, water and sediment chemistry, hydrology, trophic state and air flow patterns. The results will be used to develop preventive actions and management techniques.

4.4 Summary of Data Set Parameters

All measurements were generated from probes attached to a sonde deployed in the water column of each lake.

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition

5.1.1 Sampling Objective

Collect accurate water quality data at the deepest part of each lake.

5.1.2 Sample Collection Methods Summary

DIFW bathymetric maps were used to determine the deepest part of each lake. A YSI 6000 Multiprobe was allowed to equilibrate, then the sonde was deployed to measure and record profiles for dissolved oxygen, temperature, pH and specific conductivity at one, two or five meter intervals.

5.1.3 Sampling Start Date

June 1993
September 1994

5.1.4 Sampling End Date

September 1993
September 1994

5.1.5 Platform

Not applicable.

5.1.6 Sampling Equipment

YSI 6000 Multiprobe with an Omnidata PC-286LX

5.1.7 Manufacturer of Sampling Equipment

Not known

5.1.8 Key Variables

All data were collected in the field.

5.1.9 Sampling Method Calibration

Not applicable.

5.1.10 Sample Collection Quality Control

Water samples were collected first to ensure an undisturbed water column.

Duplicate readings at the 1 meter depth were recorded in the field for dissolved oxygen, temperature, pH and specific conductance along with water quality profiles.

5.1.11 Sample Collection Method Reference

Maine Department of Environmental Protection et. al., 1993. Project Work/ Quality Assurance Plan, Fish Tissue Contamination in the State of Maine. Maine Department of Environmental Protection, Maine Department of Inland Fisheries and Wildlife and U.S. EPA Region 1 Environmental Services Division. December 20, 1993.

5.2 Data Preparation and Sample Processing

Not applicable

6. DATA MANIPULATIONS

6.1 Name of new or modified values

Not applicable.

6.2 Data Manipulation Description

Not applicable.

6.3 Data Manipulation Examples

Not applicable.

7. DATA DESCRIPTION

7.1 Description of Parameters

CONTENTS

Data Set Name: REPROFIL Observations: 1589
Engine: V612 Variables: 10

| # | Parameter SAS Name | Data Type | Len | Format | Parameter Label |
|----|-----------------------|--------------|-----|----------|-------------------------------|
| 1 | MIDAS | Char | 7 | \$7. | Lake identification number |
| 2 | REP | Char | 7 | \$7. | Profile replicate |
| 3 | DEPTH | Num | 8 | 5.1 | Sonde depth |
| 4 | TEMP | Num | 8 | 6.1 | Temperature (deg C) |
| 5 | DISO | Num | 8 | 6.2 | Dissolved oxygen (mg/l) |
| 6 | SPCOND | Num | 8 | 5. | Specific conductance (uS/cm) |
| 7 | PH | Num | 8 | 6.2 | pH |
| 8 | SAMPDATE | Num | 8 | MMDDYY8. | Sampling date |
| 9 | NEGDEPTH | Num | 8 | 5.1 | Not known |
| 10 | ID | Char | 6 | \$6. | Profile identification number |

7.1.6 Precision to which values are reported

Values are accurate as reported in 7.1.

7.1.7 Minimum value in data set

| Variable | Minimum |
|----------|---------|
| DEPTH | 0.0 |
| TEMP | 4.1 |
| DISO | 0.02 |
| SPCOND | 6 |
| PH | 0.10 |
| NEGDEPTH | 3.0 |

7.1.8 Maximum value in data set

| Variable | Maximum |
|----------|---------|
| DEPTH | 47.0 |
| TEMP | 26.1 |
| DISO | 14.07 |
| SPCOND | 294 |
| PH | 15.96 |
| NEGDEPTH | 50.0 |

7.2 Data Record Example

7.2.1 Column Names for Example Records

MIDAS;REP;DEPTH;TEMP;DISO;SPCOND;PH;SAMPDATE;NEGDEPTH;ID;

7.2.2 Example Data Records

MIDAS;REP;DEPTH;TEMP;DISO;SPCOND;PH;SAMPDATE;NEGDEPTH;ID;
1008; ;1.0;24.1;9.11;202;8.02;08/09/93;49.0;A;
1008; ;2.0;22.9;8.67;203;7.70;08/09/93;48.0;A;
1008; ;3.0;20.3;8.41;217;7.28;08/09/93;47.0;A;
1008; ;4.0;16.5;10.21;228;7.28;08/09/93;46.0;A;
1008; ;5.0;12.5;9.18;252;6.79;08/09/93;45.0;A;

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-71 Degrees 00 Minutes 47 Decimal Seconds

8.2 Maximum Longitude

-67 Degrees 10 Minutes 30 Decimal Seconds

8.3 Minimum Latitude

43 Degrees 15 Minutes 21 Decimal Seconds

8.4 Maximum Latitude

47 Degrees 07 Minutes 11 Decimal Seconds

8.5 Name of area or region

EPA Region 1

The sampling area included the entire state of Maine.

9. QUALITY CONTROL AND QUALITY ASSURANCE

9.1 Data Quality Objectives

Water profile duplicates should have no more than a 30% relative percent difference.

9.2 Data Quality Assurance Procedures

All 1 meter water profile duplicates had a relative percent difference less than 30%, except one sample each for specific conductance and pH. It is possible that the questionable data were due to operator error, especially if insufficient time was allowed for sonde readings to stabilize before they were electronically logged by field staff.

10. DATA ACCESS

10.1 Data Access Procedures

Data can be downloaded from the WWW site or contact personnel listed in Section 10.3.

10.2 Data Access Restrictions

Not Applicable

10.3 Data Access Contact Persons

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10.4 Data Set Format

Data files are in ASCII semi-colon delimited format.

10.5 Information Concerning Anonymous FTP

Data cannot be accessed via ftp.

10.6 Information Concerning WWW

Data can be downloaded from the WWW site.

10.7 EMAP CD-ROM Containing the Data Set

Data are not available on CD-ROM

11. REFERENCES

DiFranco et. al., 1995. Fish Tissue Contamination in Maine Lakes. Data Report. State of Maine Department of Environmental Protection, Bureau of Land and Water Quality, Division of Environmental Assessment. September 1995.

Maine Department of Environmental Protection et. al., 1993. Project Work/Quality Assurance Plan, Fish Tissue Contamination in the State of Maine. Maine Department of Environmental Protection, Maine Department of Inland Fisheries and Wildlife and U.S. EPA Region 1 Environmental Services Division. December 20, 1993.

12. TABLE OF ACRONYMS

| ACRONYM | DESCRIPTION |
|---------|--|
| DEP | Maine Department of Environmental Protection |
| DIFW | Maine Department of Inland Fisheries and Wildlife |
| EMAP | Environmental Monitoring and Assessment Program |
| EPA | Environmental Protection Agency |
| HetL | Maine Department of Human Services Health and Environmental Testing Laboratory |
| MIDAS | Maine Information Display Analysis System - unique number assigned to each Maine lake |
| PCBs | polychlorinated biphenyls |
| QA | Quality Assurance |
| QA/QC | Quality Assurance/Quality Control |
| REMAP | Regional Environmental Monitoring and Assessment Program |
| UMO | National Biological Survey and Sawyer Environmental Chemistry Laboratories at the University of Maine at Orono |

13. PERSONNEL INFORMATION

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